



EMCDDA PAPERS

Captagon: understanding today's illicit market

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Abstract: Originally, Captagon® was the main brand name for a medicinal product containing fenetylline as its active ingredient. It is no longer produced today or used for therapeutic purposes. Nevertheless, many countries in the Middle East regularly report seizures of a drug known as 'captagon' as part of their reporting obligations to international organisations. Captagon is also reported to be a commonly used stimulant in the Middle East and, to a lesser extent, some countries bordering the European Union, while some indicators suggest that European countries may be a source of the captagon consumed in these countries. In addition, some recent media reports have linked this drug to perpetrators of terrorist acts in Europe or terrorist groups based in areas of conflict in the Middle East. This has led to heightened interest in and concern about this drug, although only limited information is available on what the substance reported as captagon actually is and where it comes from.

This report therefore aims to provide an overview of what is known about the captagon phenomenon, and how it may concern Europe, to assist those working in the illicit drugs field who may need to respond

to the issue. It reviews how the drug known as captagon has evolved from the medicinal product Captagon® into illicitly produced and marketed tablets, which generally appear to contain other substances, most commonly amphetamine, despite bearing the logo that was used on the original Captagon® tablets. It also reviews what is known about the current production, supply and use of captagon. Finally, it highlights how the often sensationalist media reports of special links between captagon use and terrorist activity in Europe are not supported by evidence, although there may be some opportunistic links between drug use and supply in general and terrorism.

Keywords amphetamine, captagon, drug supply, drug trafficking, drug precursors, stimulants, Middle East

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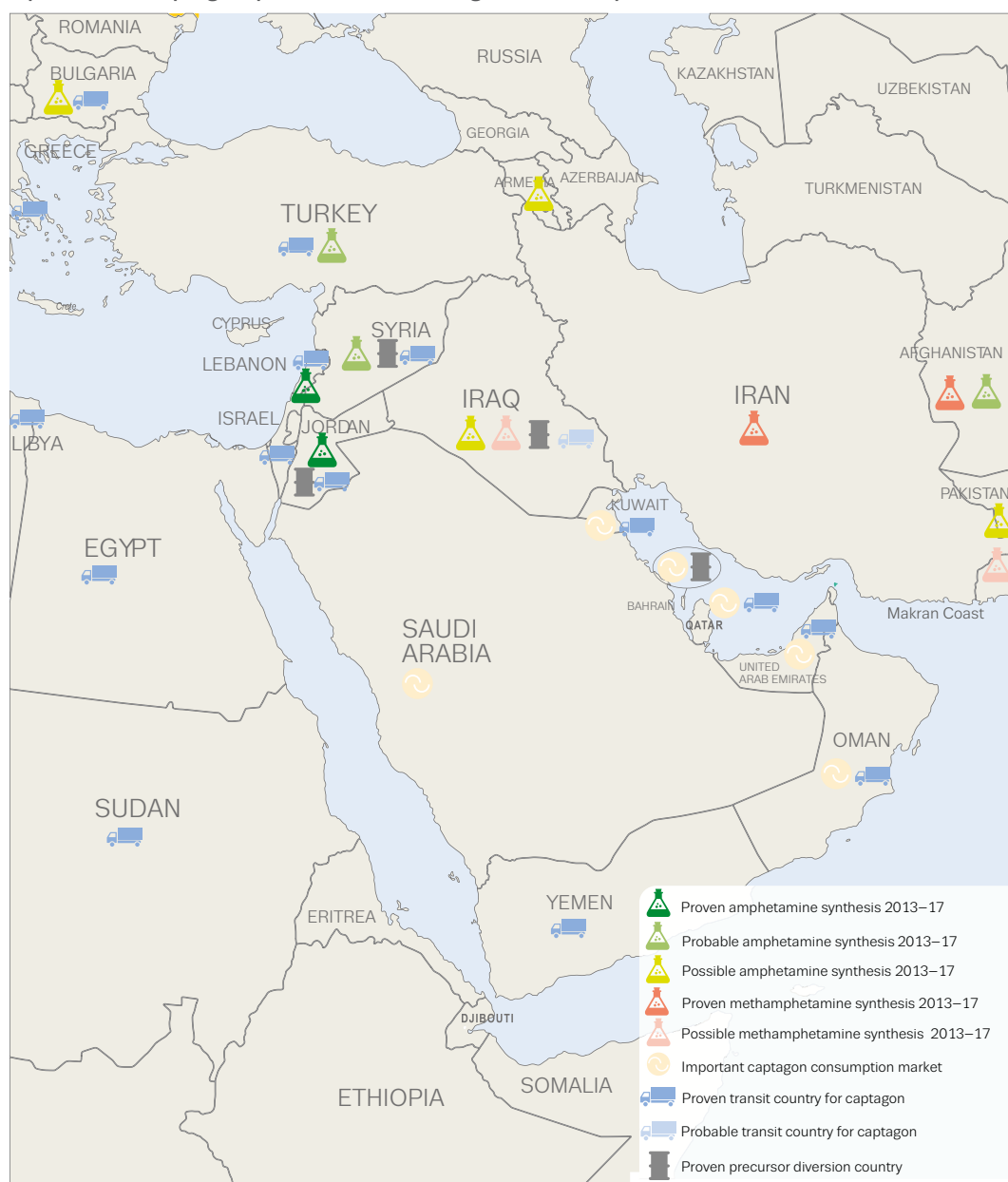
Introduction

Originally, Captagon® was the main brand name for a medicinal product containing fenetylline as its active ingredient. It is no longer produced today or used for therapeutic purposes. Nevertheless, many countries in the Middle East⁽¹⁾ regularly report seizures of a drug known as 'captagon' as part of their reporting obligations to international organisations. Captagon is also reported to be a commonly used stimulant in both the Middle East and some countries bordering the European

Union, and drug seizures indicate that European countries may sometimes be the source of the captagon consumed in these countries (see Figure 1). In addition, some recent media reports have noted that perpetrators of terrorist acts in Europe have used this drug or that it is being produced or used by groups based in areas of conflict in the Middle East. Media accounts in this area have been not always accurate and sometimes sensationalist, and the drug has even been referred to on occasions as 'the terrorist drug', 'jihadi magic potion' or the 'Daesh drug' (ARTE, 2015; Orsini, 2015; Des Déserts, 2016).

FIGURE 1

Amphetamines, precursors, captagon: production, trafficking and consumption



Source: Various UNODC and INCB reports.

⁽¹⁾ For the purposes of this report, the term 'Middle East' refers to the following countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates and Yemen, collectively referred to as the 'Arabian Peninsula', as well as Israel, Iraq, Jordan, Lebanon and Syria.

However, the information available on both the supply of captagon and its use and associated harms is very limited, making it difficult to accurately assess the extent and nature of use or its impact on public health. Nevertheless, sufficient information exists to allow us to provide an overall assessment of the situation and comment on some aspects of supply, although the reader should be aware that this analysis must necessarily be viewed with caution because of the limited information available. This report therefore aims to provide an overview of what is known about the captagon phenomenon, and how it may concern Europe, to assist those working in the illicit drugs field who may be involved in responding to the issue. To achieve this, we briefly describe the history of the use of Captagon® as a medical product, consider how this is linked to the emergence of illicit captagon, and review what is known about the latter's current production, supply and use.

In this report, the term *Captagon*® will be used strictly to refer to the original pharmaceutical product and the term *captagon* to refer to illicitly produced tablets or to reports of drugs seized or used that are described as captagon.

Note on the methodology

The information presented in this report has been obtained from the following sources:

- 1) A multilingual (Dutch, English, French, German, Portuguese and Spanish) search of published scientific and grey literature and open sources. It included European Union agencies (EMCDDA, Europol, including the European Multidisciplinary Platform Against Criminal Threats (EMPACT) and the European Union Agency for Law Enforcement Training (CEPOL)) and international agencies and governmental sources, including the International Narcotics Control Board (INCB), United Nations Office on Drugs and Crime (UNODC), Observatoire français des drogues et des toxicomanies (OFDT), US Drug Enforcement Administration (DEA), Internal Security Forces (ISF)-Lebanon, Agence nationale de sécurité du médicament et des produits de santé (ANSM) and the US Department of State.
- 2) A fact-finding mission to Lebanon.
- 3) Interviews with experts from Afghanistan, Belgium, Cyprus, France, Germany, Greece, Israel, Jordan, Lebanon, Netherlands, Portugal, Spain, Turkey, United Arab Emirates, United Kingdom and United States.

Publicly available sources are listed in the references section of this report. Where restricted sources were used, it is noted in the text.

The development of captagon use — from medicine to illicit drug

A review of the history of the medicinal product Captagon®, its former therapeutic uses and its transformation into a common drug of misuse in some countries, which is very different from the original product, both illustrates the limitations of the evidence on the topic and provides a backdrop against which to consider the current situation.

The medicinal product Captagon®

Captagon® was the brand name of a psychoactive medicine produced in the 1960s by the German company Degussa Pharma Gruppe. It was sold as whitish-coloured tablets marked with a characteristic logo comprising two half-moons (see Figure 2). It was mainly prescribed as a treatment for attention deficit disorder, narcolepsy and as a central nervous system stimulant. Its two main markets were Europe and the Middle East.

Captagon® tablets contained 50 milligrams of fenetylline, a synthetic drug of the phenethylamine family to which amphetamine also belongs. Following ingestion, fenetylline is metabolised into amphetamine and theophylline (a natural alkaloid, bronchodilator and mild stimulant from the same family as caffeine ⁽²⁾), and so it can be difficult to determine by forensic investigation if fenetylline, or a combination of amphetamine and theophylline, has been consumed.

FIGURE 2
Captagon tablets



Photo © Department of Identification and Forensic Science, Israel Police.

⁽²⁾ Theophylline is present in coffee, tea and cocoa, among other things. It is not controlled under United Nations drug control conventions.

Captagon® and doping

Media reports suggest that misuse of Captagon® may have occurred in Europe during the period 1970-1990, particularly in sport as a performance-enhancing substance. For example, in France, Captagon® was linked to an important cycling doping case in 1987 (Le Monde, 1987a) and was also reported to be used in other sports, including professional football during the 1990s (Le Monde, 2006; Müller and Belhoste, 2015). The use of stimulants, 'especially Captagon', was also reported as 'commonplace' in French rugby during the 1980s and 1990s (Senate, 2013; Broussard, 2015). There are also similar reports in relation to professional football in Germany (Le Monde, 1987b; Frankfurter Allgemeine, 2007; Le Matin, 2013).

In 1986 fenetylline was included in Schedule II of the United Nations (UN) Convention on Psychotropic Substances 1971 ⁽³⁾. Following this, signatory countries moved to prohibit production and use. However, in some countries a few specific medical uses continued to be allowed for some time. For example, until 2013, the ANSM (the French National Agency for Medicines and Health Products Safety) still allowed small quantities of Captagon® to be used for patients presenting with narcolepsy, making France one of the five countries in the world (with Belgium, Germany, Luxembourg and the Netherlands) that reported the use of fenetylline for medical purposes at that time. With respect to production, the INCB reports that no country has manufactured fenetylline since 2009 and 'by the end of 2009, [worldwide] stocks of fenetylline had been virtually depleted' (INCB, 2011a, p. 38). Nevertheless, the INCB continues to make small estimates of the global quantities of fenetylline needed for medical or research purposes (180 g in 2015, for example). This implies that the drug was available and used to a very limited extent for some time after 2009 (INCB, 2015, 2016a) ⁽⁴⁾.

Although some countries held stocks of fenetylline at the time it was placed under international control (e.g. in 1987 the INCB reported that stocks of the drug amounting to almost 4 tonnes ⁽⁵⁾ were held in Germany, Spain and Switzerland),

most of these (all the Swiss and half of the German stocks) were reportedly destroyed in the early 1990s (INCB, 2011a, 2016b). The remaining German stocks (estimated in 2000 at 573 kg) were exported to the Netherlands in 2001. It is not reported what became of the Spanish stocks. Destroying stocks was meant to put an end to 'sporadic' attempts at diverting fenetylline to the illicit markets by the use of false import authorisations. However the INCB notes that these attempts were only rarely successful. By the mid-2000s, the Netherlands was the only country known to still hold large quantities of fenetylline (reported to be 212 kg at the end of 2005). Following this, there were only sporadic reports of movements on the fenetylline market, with the last reported by the INCB occurring in 2009 ⁽⁶⁾.

Despite the INCB reporting that world stocks of fenetylline had been largely depleted by 2009, reports continued into the 2010s implying that the drug might still be being diverted into the illicit drug market. For example, in 2016 the US Department of State described Lebanon as 'a transit point for [...] fenethylline' (US Department of State, 2016), while millions of captagon tablets have been reported as being seized annually since the end of the 1990s in Europe, Turkey, Africa and the Middle East (DEA, 2003; Bernas, 2015; Loumé, 2015; Global Initiative against Transnational Organized Crime, 2016). These apparently conflicting reports raise questions about whether the substances being seized originated from diversion of the medicine Captagon® or are the result of illicit production or falsified supplies, which may contain something else entirely.

From diversion to illicit production

Until the end of the 1990s the diversion of fenetylline stocks may have initially allowed traffickers from eastern Europe, especially Bulgaria, to supply emerging markets for stimulants in the Middle East with tablets containing fenetylline (INCB, 1991; Al-Gharably and Al-Obaid, 1993; Courrier International, 2015). However, it appears that, as stocks of the medicine became exhausted and control measures intensified, gradually other substances may have been introduced into tablets sold as captagon.

The main source of information to support this comes from the analysis of drug seizures (see the box below). In only a few early reports is fenetylline reported to be present in seized illicit captagon tablets (Al-Gharably and Al-Obaid, 1993). Virtually all the contemporary information available suggests that the tablets seized on the drug market in recent years are not diverted Captagon® tablets but clandestinely manufactured

⁽³⁾ In the 1971 UN Convention, the chemical name of fenetylline is 7-[2-[(α-methylphenethyl)amino]ethyl]theophylline.

⁽⁴⁾ The annual reports from the INCB include statistics on imports and exports of controlled psychotropic substances as reported by all countries. They can therefore be used to derive a minimum estimate of the stocks available worldwide for a given year. The most recent of these reports, which contains data for 2014, states that there are no exports of fenetylline. However, the imported quantities reported are high: 10.6 tonnes in 2014 and 9.8 tonnes in 2013. This is difficult to understand, as it is reported that the largest stocks worldwide in 2004, held by the Netherlands, amounted to 212 kg, and that fenetylline had not been manufactured anywhere since 2009 (INCB, 2006; INCB, 2015).

⁽⁵⁾ In 1988 the INCB estimated the worldwide medical requirements for fenetylline at 350 kg per year. Stocks estimated at 4 tonnes in 1987 are therefore sufficient to cover more than 11 years of global consumption at 1988 levels.

⁽⁶⁾ Some of the stocks in the Netherlands were reportedly exported to Belgium (68 kg in 2005), which subsequently re-exported 7.6 kg of this to Germany and France (INCB, 2006). In 2009, Belgium noted that it had exported 6 kg and Germany reported that it had imported 5 kg (INCB, 2015).

Data from forensic analysis of captagon seizures

For the purposes of this review, data on the forensic composition of seized captagon tablets were identified from Bulgaria, Iraq, Jordan, Lebanon, Saudi Arabia, Serbia, Turkey and Yemen, which covered the period 1992 to 2013. These consistently show amphetamine to be the principal psychoactive drug present, often combined with other substances (Al-Mazroua, undated; Al-Gharably and Al-Obaid, 1993; Dimova and Dinkof, 1994; Alabdalla, 2005; Nevescanin, 2008; DEA, 2009; UNODC, 2009; TUBIM, 2013; Demirkiran et al., 2014; German BKA, 2016). In a few cases, however, methamphetamine rather than amphetamine was reported to be present. Interestingly, in some tablets the presence of amphetamine together with theophylline suggests that illicit producers may have been trying to more accurately reproduce the effects of the original formulation of the medicinal product Captagon®.

Not all seized captagon tablets analysed contained amphetamine. In Saudi Arabia, for example, typically between 12 % and 16 % of the tablets tested were composed of mixtures of other substances, not all of which were psychoactive. These included caffeine, ephedrine, chloroquine, quinine, theophylline and paracetamol (Al-Mazroua, undated; Al-Gharably and Al-Obaid, 1993). Similarly captagon tablets analysed from two recent (2016) seizures in Lebanon were found to contain only caffeine (7).

When amphetamine was present, the amount contained in individual tablets was highly variable. For example, analysis conducted in Saudi Arabia found that amphetamine was present only as a 'trace amount' in half the tablets tested.

In contrast over one third (38 %) contained amphetamine in quantities that were described as 'considerable' (Al-Mazroua, undated). Similarly, tests carried out by the DEA on four illicit captagon seizures made in Iraq in 2009 found that the tablets contained mixtures of between 7 and 20 mg amphetamine, 30 and 65 mg caffeine, 14 and 39 mg theophylline and 9 and 21 mg paracetamol (DEA, 2009). This is similar to an analysis reported in 2013 by the German Bundeskriminalamt (BKA) of four samples from different Lebanese seizures of captagon in which the tablets contained between 8 and 14 % amphetamine, 12 and 35 % caffeine, 10 and 14 % theophylline and 6 and 20 % paracetamol (German BKA, 2016). The most recent data emerged as a result of Operation Missing Link, led by the INCB between April 2016 and January 2017. They largely confirmed previous results. Therefore, forensic profiling analysis by the German BKA of samples from 65 different seizures of captagon tablets, made in Jordan, Lebanon and the United Arab Emirates, concluded that none of the pills tested contained fenetylline but that the main active ingredient was amphetamine in combination with other substances including caffeine, theophylline, quinine and paracetamol. The vast majority (82 %) of the amphetamine found in the tablets had been manufactured from the benzyl methyl ketone (BMK) precursor alpha-phenylacetoacetonitrile (APAAN; see box 'The precursors of amphetamine'), and seizure information suggests that BMK glycidic derivatives are also used (BKA, 2017; INCB 2018). It is worth noting that APAAN and glycidic derivatives of BMK were used to manufacture amphetamine in Europe in the period 2015-2016 (EMCDDA, 2018).

tablets that are marked with a similar logo (see Figure 3) but do not contain fenetylline. A note of caution here: there has been only limited forensic analysis of seized illicit captagon tablets, therefore the composition of most reported captagon seizures is unknown. However, the information available suggests that amphetamine and often caffeine are the psychoactive substances most likely to be present, although it should also be noted that tablet content appears highly variable.

FIGURE 3

Tablet punch (stamp) with the characteristic Captagon® logo comprising two half-moons found in a dismantled illicit laboratory



Photo © OCRIS/DEASRI

(7) Verbal communication from the Lebanese Customs authorities, Port of Beirut, 18 May 2016.

Information on patterns of captagon use

Nowadays, reports of widespread use of captagon as a stimulant mainly emanate from the Middle East and from some countries bordering the European Union. However, very little contemporary information is available on the consumer markets for captagon in these countries, making it difficult to describe the dynamics of these markets. Nevertheless, anecdotal and expert reports, as well as inference from supply-side information, suggest that in many countries the use of captagon as a stimulant may be significant, although currently not quantifiable. Interpreting both demand and supply data is hampered by the fact that amphetamine-type stimulants (ATS), which would include amphetamine, methamphetamine and fenetylline, are generally reported together. Because, as discussed above, much captagon appears to actually be amphetamine, this is perhaps not a problem. However, it does mean that it is difficult to know how many people use captagon tablets, whatever they actually contain, or whether there is in fact any fenetylline use at all.

The UNODC has reported estimates for Kuwait and Saudi Arabia on the use of ATS, excluding 'ecstasy'-type substances. The annual prevalence of ATS use in the general population (aged 15-64) was estimated at 0.27 % in Kuwait (2005) and 0.40 % in Saudi Arabia (2006). The accuracy of these estimates is unclear, but the UNODC suggests that these figures appear to be too low when viewed in the context of drug seizures in the region and therefore are probably underestimates (UNODC, 2014). It is notable that the quantities of amphetamine intercepted in the Arabian Peninsula since 2008 make up more than 50 % of the global total.

Some very limited data are available on drug treatment in the region, but again it is difficult to interpret. It is reported that 3 027 people were treated for ATS use in Saudi Arabia in 2012, representing 51 % of all treatments recorded. A study conducted in the United Arab Emirates between 2002 and 2011 reported alcohol as the most frequently used drug among the 367 patients treated, although this study also appears to indicate an increase in the number of patients receiving treatment for both amphetamine and methamphetamine use (Elkashef et al., 2013; UNODC, 2014).

In the absence of data on use, seizure data may provide some indication of patterns of use. Although robust quantitative data are lacking, interviews with law enforcement officers suggest that since 2014 illicit captagon seizures have been increasing in a number of Middle East countries (Israel, Jordan and United Arab Emirates, in particular) ⁽⁸⁾. However the limited quantitative seizure data available through annual reports made to the UNODC is challenging to interpret (<https://data.unodc.org>).

[unodc.org](https://data.unodc.org)). In the data reported at country level, only in some cases are the seizures explicitly referred to as 'captagon'. However, as the information from forensic analysis of seized captagon tablets suggests that in most cases the active ingredient is amphetamine, it is probable that a significant proportion of seizures reported as amphetamine are in the form of captagon tablets.

In 2015, Lebanon reported the seizure of more than 15 million illicit captagon tablets, which was around half the amount that was seized in 2014 — a record year (ISF, 2016). The cumulative quantities of seizures reported to the UNODC and designated 'captagon' in five Arabian Peninsula states (Bahrain, Kuwait, Qatar, United Arab Emirates and Yemen) between 2010 and 2014 amount to 4.87 million tablets and 1.43 tonnes. During the same period, Saudi Arabia was the country that seized by far the largest quantities of amphetamine, totalling more than 325 million tablets, with 100 million reported in 2014 alone. Although the Saudi authorities do not report this explicitly, it is likely that the majority of these tablets were captagon. The United Arab Emirates also reported nearly 41 kg of amphetamine in 2010, although again this was not specifically identified as 'captagon' (UNODC, 2014, 2016).

Tens of millions of tablets, most of which were identified as 'captagon' were also seized between 2010 and 2014 in Iraq, Jordan, Lebanon and Syria (Figure 4). These countries are usually assumed to be transit or production territories for illicit captagon and not large consumer markets. This may be changing, however, as some recent information suggests that consumption in this area, particularly in Syria, may be increasing (UNODC, 2014, 2016).

FIGURE 4
Captagon tablets seized in a Lebanese laboratory



Photo © O CRTIS/DEASRI

⁽⁸⁾ Interview with Emirati, Jordanian and Israeli police officers, conducted April 2017.

The production and supply of captagon

As discussed above, captagon tablets seized in the Middle East appear to contain mainly amphetamine, and it follows that captagon may be described as amphetamine in tablet form. Most of the information available on the approaches to production of amphetamine, in bulk and tablet form, relates to the *modi operandi* of European-based synthetic drug producers, for which there is relatively solid evidence (EMCDDA and Europol, 2011, 2016; EMCDDA, 2018). Although the extent to which this applies elsewhere is less well documented, the information available from the Middle East indicates that there are many similarities with European production methods and that some European organised crime groups are involved in amphetamine production in that region.

The production of illicit synthetic drugs sold in tablet form, such as captagon, may be broken down into two distinct parts: chemical synthesis of the active ingredient (here amphetamine), followed by the manufacture of tablets or tableting (here captagon). These two phases may take place in the same facility but may also often be carried out in different locations, or even different countries, and sometimes by separate groups (EMCDDA and Europol, 2011, 2016). Large organised crime groups specialising in synthetic drug production in Europe may manufacture the tablets themselves; however, it also appears common for amphetamine to be supplied 'in bulk' to third parties that will assume the responsibility for adding the necessary cutting agents and excipients, and pressing the tablets. Some evidence suggests that this may also be occurring in the Middle East and especially in Lebanon (Madlena, 2015; ISF, 2016).

Geographical separation of the different production phases may be used to reduce the risks of detection. Alternatively, it may reflect the fact that these two production phases require different chemicals, equipment and technical skills. Compared with synthesis of the active ingredient, tableting is the less technically demanding activity, and the necessary equipment (pill presses) and chemicals (cutting agents and excipients) are easier to access. When it occurs, this separation in roles also appears to have a number of important consequences. In particular, it may help explain the diversity seen in the content of seized illicit captagon tablets (German BKA, 2017). It may also result in more diversity, both geographically and in terms of the groups involved, in captagon production and trafficking. The decentralisation of production also makes it more challenging for law enforcement authorities to target the supply of this product effectively. Importantly, it also may make involvement in captagon tableting and distribution an attractive option for generating income for armed groups, based in or near countries

The precursors of amphetamine

The main precursors of amphetamine are norephedrine and 1-phenyl-2-propanone (P-2-P), also known as phenylacetone or BMK. These two chemicals are listed in Table I of the UN Convention of 1988. BMK can also be used to make methamphetamine, although ephedrine and pseudoephedrine (also listed in Table I) are more commonly used.

By far the most frequently used precursor for amphetamine manufacture is BMK. It was estimated that only 37 tonnes of BMK were needed in 2015 to meet all global licit requirements (INCB, 2015). It is, however, difficult to obtain this substance directly from legitimate businesses. This is because the trade in this chemical is closely monitored by national and international authorities and because of the low use of BMK in industry: it is mainly required for some limited purposes by the pharmaceutical industry. Buying large quantities of BMK from a legitimate company will, in principle, require a permit from at least one national authority. This means that procuring BMK represents a major challenge for amphetamine producers, and that the detection of diversion attempts is less challenging than for some other precursor chemicals that are used in larger quantities in industry.

An alternative approach is to synthesise BMK illegally from other substances (sometimes called pre-precursors), not all of which have been placed under international control and some of which can be more easily obtained in large quantities, for example from chemical suppliers based in Asia. It is common today for illegal amphetamine producers to use pre-precursors, such as APAAN, or phenylacetic acid (PAA). As both of these have now been placed under international control, various other chemical routes for synthesis have emerged recently, for example using alpha-phenylacetoacetamide (APAA) or 'masked' forms of BMK such as BMK bisulphite or glycidic derivatives of BMK (EMCDDA and Europol, 2011, 2016; INCB, 2018)]⁽⁹⁾.

experiencing social or political unrest or conflicts, that lack the technical expertise and accompanying infrastructure necessary for synthetic drug production (Global Initiative against Transnational Organized Crime, 2016).

⁽⁹⁾ BMK is also a precursor of methamphetamine. According to the United Nations, synthesis of 1 kg of amphetamine or methamphetamine in a clandestine laboratory requires between 1.5 and 1.8 litres of BMK. Approximately 1.5 kg of phenylacetic acid is needed to produce 1 litre of BMK (INCB 2016b).

Sources of supply (early 1990s to mid-2000s) — the Bulgarian-Turkish connection

Producing captagon for the consumer markets in the Middle East has always been a transnational operation. Two key periods can be sketched out since the early 1990s.

From around 1990 to the mid-2000s, amphetamine produced in the Balkan region is thought to have been the main source for captagon sold in the consumer markets of the Middle East, especially of the Arabian Peninsula. Bulgarian and Turkish criminal networks, active in other drug trafficking in the Balkan region, also appear to have played an important role in illicit captagon production and trafficking.

During this period, significant amphetamine manufacture and tableting is known to have taken place in Bulgaria, and the captagon tablets produced were often exported via Turkey. Some more limited production is also likely to have occurred in Slovenia and Serbia. Amphetamine produced in Bulgaria is also known to have been exported to Turkey for tableting (INCB, 1999, 2003; UNODC, 2008). Amphetamine was also synthesised in Turkey, especially in Istanbul, and in the provinces of Gaziantep and Hatay (Antioch), which are on the border with Syria (UNODC, 2008; Global Initiative against Transnational Organized Crime, 2016).

The Bulgarian and Turkish authorities took robust measures, between 2003 and 2006, to suppress illicit captagon manufacturing. In Bulgaria, this resulted in at least 18, mostly large-scale, laboratories involved in amphetamine synthesis and/or tableting being dismantled during this period. Bulgarian seizures of amphetamine powder and captagon tablets shot up, rising from 65 kg in 2001 to 1.45 tonnes in 2004 and 1.1 tonnes in 2005, before falling to 113 kg in 2007. Action was also taken in Turkey, which reported the dismantling of 12 laboratories (synthesis and tableting) in 2006 alone. Captagon seizures in Turkey increased from 1.1 million tablets in 2001 to nearly 9 million tablets in 2004 and 20 million in 2006, a record that has not been equalled since (UNODC, 2003, 2008; INCB, 2009; EMCDDA and Europol, 2011; EMCDDA, 2017).

Captagon tablets from Turkey are likely to have been transported to the Arabian Peninsula by land either via Lebanon and Jordan and Syria or through Caucasus countries such as Georgia and Armenia. Transport by sea has also been observed. For example, in 2007, it is reported that captagon from Turkey was trafficked through the Balkans to western Europe and then shipped by boat to the Arabian Peninsula directly or via neighbouring countries (INCB, 1999; DEA, 2003; UNODC, 2008; EMCDDA and Europol, 2011; Courrier International, 2015; Global Initiative against Transnational Organized Crime, 2016).

Changes from the mid-2000s onwards — displacement of production to the Middle East

By the mid-2000s, robust action by Bulgaria and Turkey appears to have reduced illicit captagon production but not eliminated it (EMCDDA and Europol, 2011; INCB, 2012, 2013). Since then practices appear to have changed and there is more evidence of the sourcing of amphetamine for captagon production from a wider and more geographically dispersed set of countries. This development is consistent with broader changes seen in the production and trafficking of other drugs driven by increasing globalisation and the boom in containerised trade (EMCDDA and Europol, 2016; Global Initiative against Transnational Organized Crime, 2016).

From the mid-2000s onwards, amphetamine production and tableting also appears to have become more common closer to, or perhaps even in, the main consumer markets for captagon in the Arabian Peninsula. Documenting changes in illicit drug production is always challenging and the data available on captagon production are particularly limited, but the information available does suggest that production in the region increased from the mid-2000s onwards. It is also possible that, from 2011 onwards, the conflict in Syria had an impact on captagon production, although again this is difficult to substantiate empirically. However, it can be postulated that a combination of weak jurisdiction, increased demand by combatants or affected populations and various factions seeking access to funds through engagement with the drug trade may all have potentially resulted in a greater incentive to increase production of captagon within the region, although the extent to which this has happened remains unclear (EMCDDA and Europol, 2016, Global Initiative against Transnational Organized Crime, 2016).

The evidence for the potentially increased production during this period comes from piecing together information on precursor imports (which may be diverted to illicit use), stopped shipments and seizures, alongside data on laboratories dismantled. This provides evidence that precursor availability in the region may have increased from the late 2000s. Between 2008 and 2011, large quantities of the amphetamine precursor BMK were officially imported into Jordan and Iraq. In 2008, nearly 19 tonnes, around 75 % of all licit global trade in BMK for that year, was imported to 'two countries in West Asia' ⁽¹⁰⁾ for the manufacture of cleaning and disinfection products (INCB, 2009). In the following year (2009), the INCB noted that nearly 20 tonnes of BMK (around 95 % of all licit world trade) was destined for 'a single country in West Asia', for the purpose of manufacturing detergents.

⁽¹⁰⁾ In the INCB reports, the collective term 'West Asia' covers a vast region encompassing the countries of the Middle East, the Caucasus and central Asia, and in particular includes Turkey, Iran, Afghanistan and Pakistan (INCB, 2010).

The INCB also noted that, as many countries in West Asia had reported large seizures of captagon, there was a risk that some of this imported BMK could have been used for illicit amphetamine synthesis (potentially to be marketed as captagon) (INCB, 2010). The INCB also reported that, in 2009, the Indian authorities had stopped two BMK consignments, of 10 tonnes and 4 tonnes, destined for Jordan and Syria, respectively. In its 2010 report, the INCB explicitly named Jordan as the importer of nearly 9 tonnes of BMK intended for re-export to Iraq; this represents more than 60 % of the total licit world trade in this precursor in that year (INCB, 2011b). In 2011, Jordan was reported to have authorised the import of approximately 50 tonnes of BMK, intended for export to Iraq for the manufacture of what the INCB referred to as an 'alleged cleaning product' (INCB, 2012). In 2012, imports of BMK were prohibited by the Jordanian government (INCB, 2013).

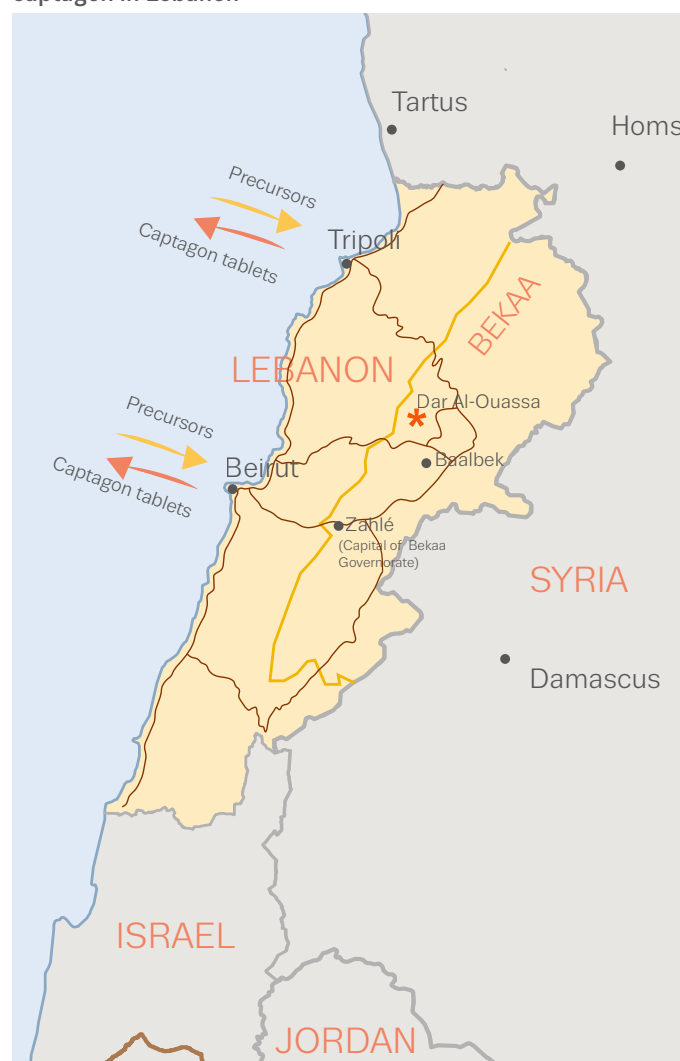
The INCB had questioned the 'legitimacy' of the imports of BMK into Jordan and Iraq in its 2010 report, in view of the fact that other chemical substances could be used to manufacture the household products concerned. It also noted that an analysis of the cleaning products in question 'showed no traces of P-2-P [BMK]' (INCB, 2011b, p. 9). Similarly, one year later, at the beginning of the conflict in Syria, the INCB reported additional analysis that suggested that the BMK content of a household product manufactured by an Iraqi company was 50 % lower than the declared level, suggesting the possibility that some of BMK required for its production may be unaccounted for (INCB, 2012).

In summary, during the period from 2008 to 2011, a total of 98 tonnes of BMK was imported into Jordan, mostly for re-export to Iraq. This represents more than two thirds of the global trade in BMK during this period. The fate of these imports is unclear but, if even a small percentage of this precursor was diverted, it could have resulted in the production of large volumes of amphetamine and captagon. Theoretically, the total amount of precursor imported could have produced between 55 and 65 tonnes of amphetamine if it had all been used for the purposes of drug synthesis (see section on 'Production elsewhere in the region' below).

Data on precursor seizures are also limited. Only one precursor seizure (498 kg of BMK by Syria in 2012) is officially reported to have taken place in the Middle East countries between 2006 and 2012 (INCB, 2010, 2013). More recently, in 2015, 3.3 tonnes of BMK and 16 tonnes of phenylacetic acid (also used for amphetamine production) were seized in Lebanon (ISF, 2016). In 2016, that country also seized nearly a tonne of what was described as 'a solid chemical', which was suspected of being destined for use in amphetamine production (INCB, 2017).

INCB reporting on precursor importation and seizures does not provide direct evidence of drug production, however, and specific data on amphetamine production in or near captagon-consuming countries are extremely limited. Lebanon, and recently Jordan, are the only countries reporting the dismantling of amphetamine synthesis laboratories in the last decade, with three clandestine laboratories reportedly dismantled in Lebanon in 2011 and one in Jordan in 2018 (see section on 'Production elsewhere in the region' below). A large-scale amphetamine synthesis laboratory was also dismantled in Lebanon in 2015 (UNODC, 2009, 2016; Petra News Agency, 2018). In this last case, the Lebanese army discovered two captagon production sites at Dar Al-Ouassa, a Shiite village in the Bekaa region (see Figure 5). In addition to the laboratory dedicated to amphetamine (and possibly BMK) synthesis, there was one dedicated to tablet manufacture (Stephan, 2016).

FIGURE 5
Imports of precursors, and production and exports of captagon in Lebanon



Sources: EMCDDA and OFDT.

The limited official data reported to international authorities, taken together with information from law enforcement sources, does lend weight to the argument that production may have increased. It also suggests a link to European organised crime groups specialising in synthetic drug production (see the box below). In particular, the presence of European 'specialists' in the illicit synthesis of amphetamine in the Middle East has been identified by law enforcement sources. For example, Bulgarian 'experts' have been reported to be present in the region from the mid-2000s onwards, and one arrest was reported in Lebanon in 2014 (UNODC, 2009; EMCDDA and Europol, 2013; Global Initiative against Transnational Organized Crime, 2016; ISF, 2016). Several Belgian and Dutch 'experts' have also been reported in the region ⁽¹¹⁾.

Production in Syria?

The UNODC reports that, in addition to Lebanon, Syria is also likely to be a source country for captagon tablets seized in the Arabian Peninsula, neighbouring countries and Turkey (UNODC, 2016). A number of other sources also make this case. In 2011, the Syrian authorities reported eight individual seizures of 'captagon', totalling 8 kg and 77 000 tablets, to the UNODC and stated that the captagon had been produced in Syria. It is possible, however, that only the tablets were produced in Syria, using amphetamine imported from Lebanon or elsewhere and no subsequent seizures from Syria were reported (UNODC, 2017a). A much-cited Reuters article from 2014 reported that amphetamine was being produced in Syria (Kalin, 2014). In 2016, the non-governmental organisation Global Initiative against Transnational Organized Crime (2016) also reported that this was occurring, based on information from sources in the Bulgarian, Lebanese and Turkish police forces, as well as seizures of captagon tablets made at the Lebanese and Turkish borders with Syria. That report also suggests that laboratories had been discovered in Syria, in both government-controlled areas and areas controlled by the jihadist group Jabhat Fateh al-Sham (previously known as the al-Nusra Front, affiliated with al-Qaeda until 2016). It does not, however, cite its sources for this information or specify whether the sites in question were engaged in drug synthesis or only tableting. However, this conclusion is supported by information provided to the EMCDDA by Turkish authorities concerning several large captagon seizures involving Syrian nationals. This includes three large seizures in 2015-16 and they also report that in 2018 they seized 5.4 million tablets on the border between Turkey and Syria as well as dismantling clandestine captagon laboratories during cross-border operations. It should also be noted that, although the evidence relating to precursor seizures raises suspicions that production of captagon may have occurred, until these recent reports from Turkey there had been no official reports of laboratory seizures in Syria.

⁽¹¹⁾ Police source, 2016.

Case study: The role of European 'experts'

In February 2016, a Belgian national was arrested in Lebanon (Belga, 2016) in possession of a false passport. This individual was known to be a high-level member of a multinational gang of synthetic drug producers operating in Belgium, the Netherlands, Poland and Turkey. He was subsequently extradited to Belgium, where a 15-year prison sentence was pending against him for his involvement in one of the biggest clandestine MDMA laboratories ever discovered in Europe, dismantled in Belgium in August 2013 (Europol, 2013; La Capitale, 2013; Huyberechts, 2016; Belga, 2017).

The use of similar equipment may also indicate a link with producers based in Europe. In the production sites dismantled by the Lebanese army at Dar Al-Ouassa in December 2015 (see Figure 5), a visual inspection of the reaction vessels used on site revealed that they were very similar to custom-made pressure reaction vessels for illicit synthetic drug production seized in the Netherlands and Belgium. The size and number of vessels and other equipment at Dar Al-Ouassa suggested that the laboratory had the capacity to produce large volumes of amphetamine. The rotary tablet press found on site had a maximum production capacity of 216 000 tablets per hour, according to the manufacturer (Fluidpack, undated) ⁽¹²⁾.

It is suspected that the Belgian national mentioned above was associated with the production sites in Dar Al-Ouassa, probably in partnership with members of a Shiite clan that has been linked with drug trafficking activities and that also owned the premises that housed these laboratories ^(13,14).

⁽¹²⁾ The discovery of this high-output specialist tableting machine is unusual, as captagon tableting operations in Lebanon are reported to usually use machines that were originally designed for sweet making and have been modified for tablet production (interview with the drug squad, Beirut, 18 May 2016).

⁽¹³⁾ The arrest in October 2015 of a member of the Saudi royal family and four other Saudi nationals at Beirut airport, while they were preparing to board a private jet bound for Riyadh loaded with over 2 tonnes of captagon (and an unknown quantity of cocaine), made the headlines (BBC, 2015; L'Orient le jour, 2015; Stephan, 2015). In addition, four other fugitives were wanted in connection with the case. According to information obtained in Beirut in May 2016, one of these individuals was a member of the Shiite clan of Dar Al-Ouassa who had been responsible for supplying the drugs. It is difficult to judge the veracity of this information.

⁽¹⁴⁾ According to information obtained in Beirut, the army originally went into Dar Al-Ouassa on 29 December and discovered the laboratories because they were looking for those responsible for the death of a Lebanese soldier who had been killed the previous day in a confrontation with members of the Shiite clan who owned the premises. One of the people arrested on this occasion was the subject of more than 70 Lebanese arrest warrants.

The Global Initiative against Transnational Organized Crime analysis suggests that political and commercial links between Bulgaria and Ba'athist Syria have existed since the 1980s, and these may have enabled alliances between Syrian and Bulgarian criminal organisations. This, and the outbreak of the civil war in 2011, may have initially provided impetus for the establishment of amphetamine production laboratories in Syria. However, subsequently, conflicts between different factions have threatened the security of these laboratories and production is said to have moved to Lebanon and possibly Turkey (Global Initiative against Transnational Organized Crime, 2016).

Other sources also support the suggestion that the conflict in Syria has resulted in the displacement of some production to neighbouring countries ⁽¹⁵⁾. Two Lebanese seizures, totalling 12 million captagon tablets originating from Syria, were made in August 2013 (Baker, 2013; FARS News Agency, 2013; Henley, 2014). The head of the Lebanese drug squad was reported as noting that the second shipment seized belonged to a Sunni Syrian businessman based in Homs. He was suspected of funding 'secular opposition' to the Syrian regime and fled the fighting in Syria to set up his illicit business in Lebanon. This account appears to be the basis for various subsequent media reports, including a documentary by the BBC (Madlena, 2015).

However, the most recent INCB report on precursors also indicates that amphetamine and captagon may be produced in Syria. After reporting that a shipment of 24 tonnes of phenylacetic acid destined for Syria was stopped in India in 2017, the INCB expressed the concern that Syrian companies may be used to import BMK or its precursors, and added that 'existing manufacturing facilities' in Syria could be misused to produce amphetamine illegally (INCB, 2018, p.18).

Production elsewhere in the region

The dismantling of an amphetamine production and captagon tableting facility in Amman, Jordan, in January 2018 may shed some light on the fate of some of the 98 tonnes of the precursor BMK imported into Jordan and Iraq during the four years preceding the war in Syria. As noted above, legitimate use or clandestine re-export may account for some this total. However, the police raid in Amman leaves little doubt that a proportion was used for the illicit production of amphetamine. The press reported that several tonnes of chemicals and drug production equipment were seized from the illicit laboratory in the Jordanian capital, which was operating under the guise of manufacturing detergents (see section on 'Changes from the mid-2000s onwards').

In addition, about 2 million captagon tablets were seized at another location, and the eight people arrested in connection with the case included 'foreign nationals' who assisted the main suspect in synthesising the amphetamine and producing the captagon pills (Petra News Agency, 2018; Al Jazeera, 2018).

Although no amphetamine, methamphetamine or heroin laboratories have been reportedly detected in Iraq since 2001, it should be noted that the country, especially the northern area on the border with Iran, Turkey and Syria, has often been associated with attempts to divert other precursor chemicals, in particular large quantities of ephedrine and pseudoephedrine and of acetic anhydride (used in the production of heroin). It is of note that the assessment of the country's pseudoephedrine requirements carried out annually by the Iraqi authorities increased 10-fold between 2007 and 2010. This increased amount is reported by the INCB to exceed the legitimate annual per capita requirements (INCB, 2012). The INCB also notes that its requests for information about Iraqi companies involved in importing precursors have not elicited a response from the Iraqi government (INCB, 2009, 2011b, 2012, 2013). More recently, the INCB expressed its concern that 'substantial amounts' of medicines containing pseudoephedrine are exported from Jordan to the 'Kurdistan region' of northern Iraq in spite of objections from the competent authorities in Baghdad (INCB, 2018). Taken together, this information raises questions about Iraq's potential role as a source country for precursors and a location for drug production, including captagon. That said, a lack of hard data makes drawing any conclusions on this issue difficult. The last captagon seizure data reported for Iraq is from 2010, when at least 1.5 tonnes of it was intercepted.

Overall, there is considerable uncertainty about current production in the region. While large volumes of captagon tablets are seized every year in the Arab world, and at times large volumes of amphetamine precursors have been imported into the Middle East, only five amphetamine synthesis laboratories have been officially dismantled in the region since 2010. With the exception of Lebanon, and recently Jordan, the synthesis of amphetamine is rarely reported by law enforcement or other authorities, although there are sufficient indications to suspect that production has, or is, taking place in other countries in the region.

Overall, it is probably correct to conclude that the situation with respect to production, trafficking and use of captagon is likely to be quite fluid and could change rapidly in the context of the evolving security, political and economic situations. Therefore, improving the surveillance of trends in the development of drug production and use in the region should be regarded as an important task, albeit one that presents significant challenges.

⁽¹⁵⁾ Police sources in Lebanon, May 2016, and Stephan (2016).

Diversification of amphetamine sources

It is also likely that the captagon supply is supported by amphetamine produced outside the Middle East.

Afghanistan has been reported to be a methamphetamine producing country for several years and, in 2010, its neighbour Pakistan reported amphetamine production taking place there (UNODC, 2014, 2017b). A seizure of 4 kg of amphetamine was made in Karachi in 2012 (UNODC, 2013) and, in 2014 and 2015, the Pakistani government reported to the UNODC a number of seizures of amphetamine destined for the Arabian Peninsula, mainly Saudi Arabia. In many of these cases, the Pakistani authorities reported that the amphetamine seized originated from Afghanistan.

Most of the seizures reported by Pakistan in 2014 related to small quantities (between 85 g and 1.2 kg) and totalled approximately 18 kg. In 2015, however, the total was 2.875 tonnes and included two large seizures of 1 tonne and 1.8 tonnes, which were made in Quetta, the capital of the Pakistani province of Baluchistan (UNODC, 2017a). Although Pakistan does not report the origin or destination of this amphetamine, it is plausible that the drug was destined for export to the Arabian Peninsula. The Baloch coast on the Arabian Sea, known as the 'Makran coast' has been known for many years as an established route for trafficking heroin by sea to the Arabian Peninsula, and more recently to East Africa (EMCDDA, 2015).

Iran has, over the last decade, become an important producer and exporter of methamphetamine to a number of countries including neighbouring Gulf states (UNODC, 2014). This suggests the potential for amphetamine production, although the evidence to support this suggestion is limited. However, Turkey reported that it seized 80 kg of amphetamine in a vehicle originating from Iran in 2012 and suggested that the drug was destined for captagon tablet manufacture (TUBIM, 2013). It is also conceivable that some of the methamphetamine synthesised in Iran may be used for captagon production, although to date there is no forensic evidence to support this.

Continuing European connections

The EMCDDA and Europol have previously reported that the consumer markets for captagon are also supplied with amphetamine synthesised in some Balkan countries that are not members of the EU and in Caucasus countries (EMCDDA and Europol, 2013). Amphetamine has been produced in Serbia since at least the beginning of the 2000s, and amphetamine synthesis laboratories and captagon tableting facilities there were dismantled in 2003. At the

time, one of these was the biggest amphetamine synthesis laboratories ever discovered in Europe (Nevescanin et al., 2008). The *National report on the drug situation in Serbia*, published in 2014, reported the dismantling of two smaller scale laboratories in 2010: one was producing amphetamine sulphate and the other BMK. The amphetamine was reported to be destined for export to Bulgaria (EMCDDA, 2014). The UNODC reported that two amphetamine laboratories were dismantled in Armenia in 2010, although no details are available (UNODC, 2012).

There is also evidence that amphetamine synthesised in the EU was and continues to be used to produce captagon tablets destined for markets in the Arabian Peninsula. In the *World drug report 2009*, the UNODC reports information from the Iranian, Lebanese and Turkish police forces indicating that amphetamine produced in Poland was sent to Bulgaria where it was tableted then exported to the Arabian Peninsula via Turkey in the form of captagon (UNODC, 2009). It is also possible that captagon is still being tableted in Bulgaria now, using amphetamine produced elsewhere: in January 2016, nearly 110 kg of captagon tablets were seized in the Bulgarian city of Plovdiv and several suspects were arrested, including a Jordanian and a Palestinian. According to police and press sources, the tablets were destined for the Arabian Peninsula and the amphetamine that they contained probably came from the Netherlands (DNES, 2016). Elsewhere, a captagon site was dismantled in the Athens area in early March 2017. Nearly 640 000 tablets were seized and four people were arrested: two Greeks, one Albanian and one Turk (AFP, 2017). The information available indicates that this was a tableting facility. The results of the analyses of the tablets seized in Greece are not yet available, so the nature and, more importantly, the source of any amphetamine that they contained is as yet unknown. It should be noted, however, that, although Greece is not known as a synthetic drug producer, it does share borders with two countries that are 'historical' centres of amphetamine production, Bulgaria and Turkey, and that one of the suspects arrested in this case was Turkish.

Turkey could thus have become a source of amphetamine once again. According to the report by the Global Initiative against Transnational Organized Crime (2016), the conflict in Syria has led to captagon production sites moving not only to Lebanon but also to the Turkish provinces of Hatay and Gaziantep. These provinces border Syria and laboratories were operating there during the 2000s. The report quotes the DEA as the source of this information but does not specify whether the sites in question were synthesis laboratories or tableting facilities. In any event, over the last 10 years Turkey, the historical hub of captagon trafficking, has also become a large consumer market for ecstasy imported from Belgium and the Netherlands, sometimes in exchange for heroin and

precursor chemicals ⁽¹⁶⁾ (TUBIM, 2013; EMCDDA, 2016; Tops et al., 2018). In Europe, amphetamine and MDMA production require similar equipment and processes and are frequently carried out by the same criminal organisations (EMCDDA and Europol, 2011). It is also likely that the drug present in some of the tablets sold as ecstasy in Turkey is amphetamine and not MDMA (UNODC, 2014).

Moreover, there is a consumer market for captagon tablets in Turkey. Two tableting laboratories were dismantled there at the end of 2011, close to the Syrian border, while the Turkish police report that they have 'from time to time' obtained information suggesting that captagon is still being produced in the country (TUBIM, 2013). Collaboration between Turkish and Belgian-Dutch criminal groups on the production and trafficking of synthetic drugs, highlighted in particular by the case study in the box above, suggests that some of the captagon market may now be, or is once again being, supplied from Turkey and western Europe.

A number of recent cases in the Netherlands could confirm this hypothesis. In March 2016, an Afghan refugee living in the Netherlands was arrested for producing captagon pills that he intended to barter for heroin. In April 2016, the Dutch law enforcement authority seized tablets and punches bearing the captagon logo from a house in Rotterdam. A year later, police dismantled a captagon (and probably MDMA) tableting facility located on a farm in the southern Netherlands. According to the Dutch authorities and media reports, more than 3 kg of captagon tablets containing a mixture of amphetamine and caffeine were seized at the site, in addition to a tablet press, punches with the captagon logo and dozens of kilograms of amphetamine and MDMA in powder form. A suspect born in Lebanon was arrested in connection with this case. Finally, in August 2017, pills and punches bearing the captagon logo were seized at a tableting site in the southern Netherlands; a Turkish connection is suspected here (Associated Press, 2017; BBC, 2017; Dutch Police, 2017).

Media reporting on captagon use and recent terrorist attacks

The use of stimulant drugs, especially amphetamine, by military personnel or combatants in conflicts has a long history (Boustany, 1993; Hautefeuille, 2002; Rasmussem, 2011; Kamieński, 2016). Furthermore, money from drug trafficking may sometimes be a source of income for some insurgent or terrorist groups. Some terrorist perpetrators in Europe have also been found to have a background that includes involvement in petty crime and drug use or drug dealing. However, the links between drug use and terrorism are difficult to identify in existing data sources and, when they exist, they often appear to be indirect (see EMCDDA and Europol, 2016, for a longer discussion on this topic).

In this section we explore the more specific question of the veracity of information from media sources that suggests links between captagon use and jihadist terrorism, since a considerable number of media reports suggest links between captagon and either the war in Syria or terrorist attacks: at times captagon has been referred to 'the terrorist drug', 'jihadi magic potion', 'the Daesh drug' or even 'the Jihad drug'. It has been suggested in the media and in a few academic articles that captagon has been used by some perpetrators of terrorist attacks in Europe and, more widely, by combatants in jihadist groups that are active in Syria or in the radicalisation of those who have joined jihadist organisations such as IS (Henley, 2014; Allodocteurs.fr, 2015; ARTE, 2015; Aveline, 2015; Bernas, 2015; Courrier International, 2015; Euronews, 2015; Ganhão, 2015; Hernández Velasco, 2015; Holley, 2015; L'Orient le jour, 2015; Loumé, 2015; Madlena, 2015; Nguyen, 2015; Nisa, 2015; Orsini, 2015; Peters, 2015; Pham-Lé, 2015; Quelen, 2015; RTS, 2015; Todd, 2015; Zemouri, 2015; Crettiez, 2016; Des Déserts, 2016; Fond and Howes, 2016; N-TV, 2016; RTP, 2016; Technikart, 2016; AFP, 2017; BBC, 2017; Wenthur et al., 2017).

Following the attack in the Bataclan venue (Paris) on 13 November 2015, one eye-witness was quoted as reporting that the attackers seemed to be under the influence of drugs (Mereu-Boulch, 2015). Media interest was also fuelled by a video of syringes, which in fact were being used for forensic science investigation but were wrongly interpreted as evidence of drug injecting before the attack (Zemouri, 2015). Some

⁽¹⁶⁾ According to the Turkish focal point of the Reitox network, most of the MDMA seized in Turkey comes from Belgium and the Netherlands. The quantities of 'ecstasy' (MDMA, MDA, MDEA) seized in Turkey have risen continuously since 2010, and in 2013 Turkey alone seized more ecstasy than all the countries of the EU combined.

experts contacted by the media commented ⁽¹⁷⁾ on the possible effects of using fenetylline and in some cases went further and speculated on its possible influence on the attacks. However, subsequent autopsy reports on the bodies of the terrorists did not detect the use of 'illicit drugs or alcohol' before carrying out the attack (Pelletier, 2016) ⁽¹⁸⁾. It should also be noted that any captagon consumed by the perpetrators would most likely have consisted of amphetamine in any case. There have been no suggestions of captagon use by the terrorists who carried out the Brussels airport and metro attacks on 22 March 2016, nor has captagon use been directly implicated in attacks in other European countries ⁽¹⁹⁾.

Some information exists that suggests the possible use of captagon by Seifeddine Rezgui, the perpetrator of the Kalashnikov attack of 26 June 2015 in Tunisia (HM Coroner, 2017). Extracts from the report by the Tunisian judge who investigated the attacks noted: 'Toxicological tests revealed the presence of a drug, the main effects of which include *"the feeling of exhaustion, aggression and extreme anger that leads to murders being committed. Another effect of these drugs is that they enhance physical and mental performance."*' (HM Coroner, 2017, p. 34). This would suggest the use of a stimulant drug, but no further details are made available in the report. A subsequent report in a British tabloid newspaper indicated that an informed Tunisian source reported that cocaine had been used by the perpetrator (Greenhill and Sinmaz, 2015). This suggestion may have been influenced by an earlier report on the *Vice News* website in January 2015 entitled 'Video shows cocaine allegedly found at home of Islamic State leader'. This video was filmed at Kobane, a town in northern Syria, during a period when the Kurdish People's Protection Units (YPG) were in the process of fighting IS (Medin, 2015). A *Vanity Fair* article in April 2016 entitled 'Captagon, enquête sur la drogue des terroristes' ('Captagon, investigation into the terrorist drug'), reported that a 'highly placed official from the Tunisian Ministry of the Interior' stated: 'The subject Rezgui exhibited a significant presence of the product Captagon, consumed over several weeks on multiple occasions before his death.' This anonymous official also

suggested that the perpetrators of the attack at the Bardo museum in Tunis in 2015 had also taken 'Captagon' before carrying out the attack. The article concludes by saying: 'The autopsies leave no doubt that the Captagon found came from Syria' (Des Déserts, 2015). The veracity of this is difficult to assess but again, if true, would probably suggest the presence of amphetamine in toxicological findings. How its origin would have been identified is equally unclear, but is unlikely to have been possible from forensic investigation of biological samples.

In summary, despite media speculation, it is difficult to substantiate any clear or direct link between captagon use and terrorist atrocities. Combatants in many conflicts are known to use stimulants for functional purposes, especially to address fatigue. The psychological properties of these drugs may be attractive to some in conflict zones and stimulants are thought to play an aggravating role in some cases of violent crime. The excessive use of amphetamine has also been shown to cause a short-lived psychotic episode in some individuals (Bramness et al., 2012). As captagon, usually containing amphetamine, is available in countries in the Middle East that are experiencing conflict, its use by combatants, including those affiliated to terrorist organisations, is quite possible but difficult to substantiate. The extent to which stimulant use may increase or aggravate in some way the considerable levels of violence seen in this region by those involved in the conflict or terrorist activities is a question for speculation. However, it is clear that drug use per se cannot be viewed as a major causal factor in these terrorist activities.

Involvement in drug production or trafficking is also a common source of income for many criminal groups, and it may also be a source of income for some of the terrorist organisations relevant here. Some media accounts have suggested that this may be the case but it remains an area that merits further investigation. As noted above, the data available mean that any comment on the production, use or trafficking of captagon needs to be made with caution.

Similarly, while some of those involved in terrorist attacks in Europe are known to have a background that includes petty crime and involvement in drug use or the drug market, any simple or direct causal relationship between drug use and subsequent terrorist activities in Europe cannot be substantiated. Media accounts that suggest that captagon may represent a special challenge in this respect appear at best misinformed and at worst unhelpful.

⁽¹⁷⁾ A neurobiologist who specialises in addictions stated in an interview with *Sciences et Avenir* on 17 November 2015 that the attackers were probably under the influence of fenetylline. According to this researcher, fenetylline 'makes the person who takes it feel all-powerful', and the magazine concluded: 'This enables him to kill without fearing a reaction by other people, who no longer even exist as far as he is concerned' (Loumé, 2015). Curiously, this latter quotation is also attributed to another scientist, a doctor specialising in addictions, who was invited to comment on the attack at Sousse in Tunisia in a France Info article published on 3 July 2015 (Allodocteurs.fr, 2015), more than four months before the publication of *Sciences et Avenir* (Loumé, 2015). However, on this occasion the doctor added an important detail that did not appear in *Sciences et Avenir*: 'But taking captagon isn't enough to make you shoot 38 people! In this case, the drug was acting on a "pre-formatted" brain.'

⁽¹⁸⁾ These results were confirmed on 19 July 2016 by the French police's *Unité de coordination de la lutte anti-terroriste* (UCLAT — Coordination Unit for the Fight Against Terrorism) in an email to the OFDT.

⁽¹⁹⁾ The autopsy on the body of the perpetrator of the failed attack at Orly airport on 18 March 2017 found traces of alcohol, cannabis and cocaine (Le Monde, 2017).

Conclusion

It is clear from the information presented in this report that firm evidence concerning both use and supply of captagon is sparse and sporadic. Nevertheless, some tentative conclusions can be drawn. Firstly, it would appear that captagon, as it is now, is generally amphetamine with a captagon logo on it. While captagon was originally mainly sourced from eastern Europe, production appears to have shifted into the Middle East where the main market is — but data are very limited so it is hard to say anything for certain. However, a European connection has probably remained, with European criminal expertise involved in production in the Middle East. It also

appears that some amphetamine produced in Europe may be shipped to the Middle East and in some cases tableted there. Finally, the suggestions of strong links between terrorism and captagon use that have featured in many media reports appear to have been overstated. As is the case for other types of drug, some terrorist groups may exploit the captagon market to finance their activities and some terrorists may at times use captagon or other drugs, but the evidence available does not indicate any particular association between captagon and terrorism. This review also highlights the need for improved data collection on this topic, in particular forensic analysis and prevalence of use in key consumer markets.

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